

Species	Known occurrence (Inger & Dutta 1986)	Extension of known occurrence
19. <i>Rana keralensis</i> Dubois, 1980	Kerala	Goa, Karnataka, Tamil Nadu
20. <i>Rana leithii</i> Boulenger, 1888	Gujarat, Kerala, Madhya Pradesh, Maharashtra	Tamil Nadu
21. <i>Rana leptodactyla</i> Boulenger, 1882	Kerala	Tamil Nadu
22. <i>Rana malabarica</i> Tchudi, 1838	Kerala, Madhya Pradesh, Maharashtra	Goa, Karnataka
23. <i>Rana semipalmata</i> Boulenger, 1882	Kerala	Tamil Nadu
24. <i>Rana syhadrensis</i> Annandale, 1919	Maharashtra, Orissa	Goa
25. <i>Rana temporalis</i> (Gunther, 1864)	Karnataka, Kerala, Maharashtra	Tamil Nadu
26. <i>Tomopterna breviceps</i> (Schneider, 1799)	Bihar, Himachal Pradesh, Kerala, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.	Andhra Pradesh, Goa, Gujarat, Maharashtra, Madhya Pradesh
27. <i>Tomopterna rufescens</i> (Jerdon, 1854)	Kerala, Maharashtra	Goa, Karnataka
RHACOPHORIDAE		
28. <i>Philautus bombayensis</i> (Annandale, 1919)	Maharashtra	Goa
29. <i>Philautus chalazodes</i> (Gunther, 1865)	Kerala	Karnataka, Tamil Nadu
30. <i>Philautus glandulosus</i> (Jerdon, 1853)	Kerala, Maharashtra	Tamil Nadu
31. <i>Philautus leucorhinus</i> (Lichtenstein & Martens, 1856)	Kerala	Goa, Karnataka
32. <i>Philautus variabilis</i> (Gunther, 1858)	Andhra Pradesh, Kerala	Tamil Nadu, Karnataka
33. <i>Rhacophorus malabaricus</i> Jerdon, 1870	Karnataka, Kerala	Goa, Tamil Nadu
GYMNOPHIONA ICHTHYOPHIDAE		
34. <i>Ichthyophis sikkimensis</i> Taylor, 1960	Sikkim, West Bengal	Kerala

31. OCCURRENCE OF THE MALABAR TORRENT TOAD *ANSONIA ORNATA* GUNTHER IN SOUTH KANARA, KARNATAKA

The Malabar torrent toad *Ansonia ornata* is one of the little known anurans in India. The only known specimens of this brightly coloured toad are probably from the Brahmagiri hills in Coorg (Daniel, J.C., *JBNHS* 60: 415-438). I recently found quite a few individuals of this toad at Neria, a small hill station off the well known Dharmastala in the South Kanara district. Neria, despite its vast

stretches of coffee, rubber and cardomom estates, still retains a fair amount of tall rainforests along the slopes and higher reaches. It receives an annual rainfall of 4500-6000 mm, with only four dry months (December-March). The terrain is rugged with several narrow torrential streams that were flowing fast especially during October-November (1990) when I was there. the slimy rocks were

the microhabitats for several species of frogs.

During the short stay (28 October to 3 November 1990) I came across at least 10 of these torrent toads at an altitude of c. 600 m. There were more juveniles and these were often far from water in the wet litter. The adults were on wet rocks just above water in the fast flowing rivers. There were freshly metamorphosing toads with tails on the rocks above water and also tadpoles clinging to the rocks in the torrents of at least one of the rivers visited.

The Malabar torrent toad is quite remarkable for its slender build and striking colour. For possible benefits of camouflage, the most striking colour pattern of bright yellow and red are restricted to the underside of the toad. The adults noted were 2.8-3.2 cm in length (snout-vent), jet black above with yellow spots on the limbs and belly. The belly is brick red, the red being a circular patch. The number of yellow spots on this red belly is variable. I found

adults with 1, 2, 3 and 5 spots on the belly. The juveniles lack the yellow spots but have a red belly patch, though less clearly defined. Dorsally they are more marbled with olive. The freshly metamorphosing toads are more olivaceous with fine black marbling. The tadpoles are black, stocky and comparatively short-tailed and show remarkable capacity to cling to the slimy rocks under water. One tadpole was observed scaling a rock to get to a small puddle of rain water.

I was not able to observe anything on the toad's food and behaviour in the field. One adult that is in a small terrarium at Bangalore prefers to sit on top of a rock provided, in an upright position, displaying the bright colours on the belly and limbs. It has not yet started accepting food.

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32. ON THE MIGRATION OF THE LARGE CABBAGE WHITE BUTTERFLY *PIERIS BRASSICAE* IN KASHMIR

(With a text-figure)

The large cabbage white *Pieris brassicae* is common in the western Himalayas. It is an altitudinal migrant, descending to plains and lower hills in winter and migrating back in summer (Wynter-Blyth 1957). The mass

movements of this species are conspicuous and well documented in Europe (Williams 1930), but the published data from India is fragmentary. The following is one such instance of migration of this species.

The location was the western ridge of the Overa Wildlife Sanctuary, Kashmir, the altitude being 3800 m. On one side the ridge falls sharply towards Liddar valley and on the other side the slope is gradual towards the Jhelum valley. The top of the ridge is narrow at some places broadening to grassy meadows strewn with alpine flowers. The ridge is flanked by stands of silver birch (*Betula* sp.), sparser near the top.

The mass movement of butterflies was first noted on the morning of 28 May 1988. The weather was calm, clear and sunny, and remained thus throughout. It continued till afternoon of the next day. Thereafter it became cloudy, overcast with a hint of rain. As we became aware of the sudden influx of butterflies it became apparent that a migration was in progress. The butterflies were coming up the ridge in an incessant stream. The flight was rapid in one direction and the butterflies were flying on, hardly resting. They kept mostly to the crest of the ridge, and at the centre the air appeared to be thick with butterflies, flying from ground level almost till the eye could reach. So striking and conspicuous was this movement that it was impossible not to notice it. The direction of the flight was from south to north (Fig. 1).

The flight of the butterflies was followed until a point where the ridge rises sharply to about 4000 m. Here the butterflies were fluttering up close to the cliff face in

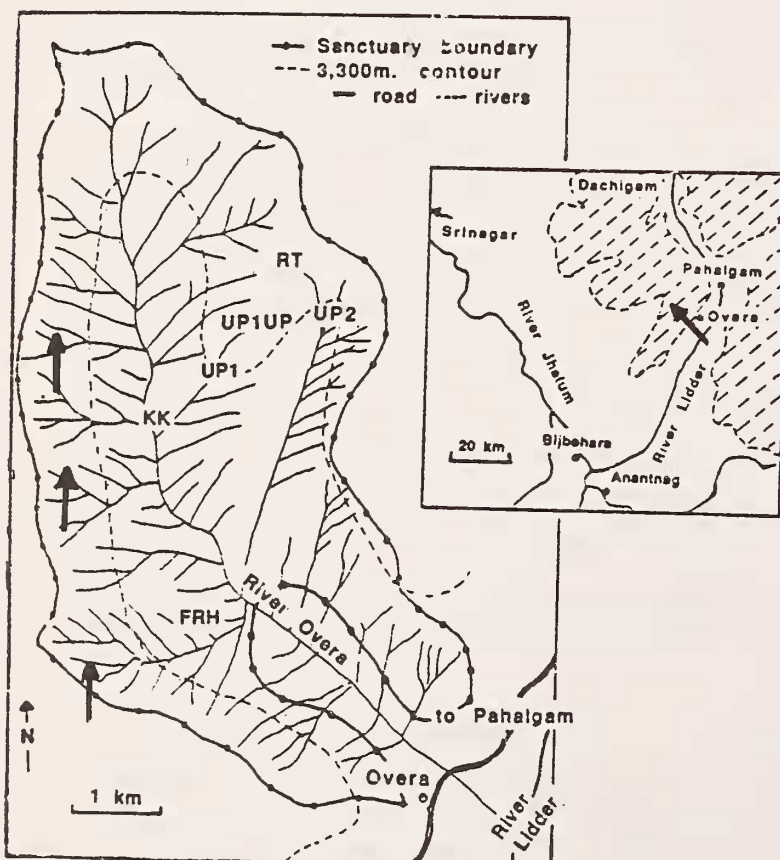


Fig. 1. Overa Wildlife Sanctuary. Dotted line is the approximate 3300 m contour. Arrow shows direction of butterfly migration.